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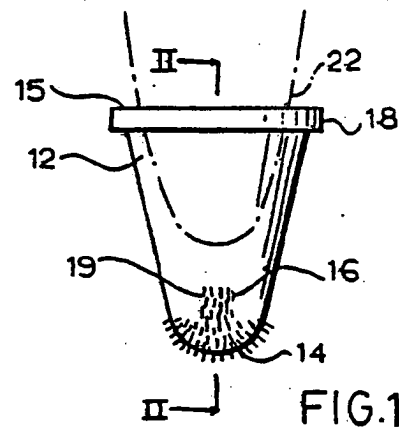
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54 Teeth cleaning device.

57 A device for cleaning teeth comprises a generally conical, hollow member (12) that is preferably made of semi-flexible or flexible material. The member has a wide, open end (15) large enough to permit insertion of a person's tongue or finger and a narrow closed end (14). A number of flexible bristles (16) or loops are connected to the hollow member and project outwardly from the exterior surface of the member. Preferably, the hollow member has a circumferential rib (18) extending around the open end.



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TEETH CLEANING DEVICE

This invention relates to devices for cleaning teeth.

Toothbrushes are well known and have been in common use for quite some time for cleaning teeth and their use helps prevent tooth decay. Inadequate cleaning of teeth can leave plaque and food particles between the teeth and particularly where each tooth intersects with the gum. Dentists and oral hygienists have made considerable efforts up to now to educate their patients on how to properly brush their teeth. Some suggest a minimum of 15 minutes per day of brushing at one time and additional brushing as soon as possible after each incident of eating. Such a recommendation is difficult in practice for many to follow sometimes because of a busy schedule and sometimes because of the lack of opportunity to brush one's teeth in the usual manner with a standard toothbrush.

The use of toothpaste with a toothbrush is very common but such use is not always possible and, even when paste is used, it can in some circumstances cause problems. For example, toothpaste may not be readily available during the day when a person is away from home. When a toothpaste is used, it can in some cases cause undesirable wear on the protective tooth enamel. This can occur if the toothpaste contains a substance or substances that are too abrasive. Also, because most toothpastes leave a fresh taste in the mouth of the user (often due to flavouring in the toothpaste) the user may be deceived into believing that his teeth are clean when in fact due to poor brushing habits or otherwise they are not. In fact, although brushing itself is quite desirable to protect one's teeth, the use of toothpaste on the brush is generally unnecessary.

Attempts have been made in the past to increase the brushing of teeth away from the home environment. For example, manufacturers have developed disposable toothbrushes or small handheld toothbrushes but the use of such devices still requires the user to locate a private place out of public view to perform the brushing task. For reasons such as this the use of such brushes has not come into common use.

An alternative to the standard toothbrush is taught in U.S. patent 3,853,412 issued December 10, 1974 to G. D. Griffin. This specification describes the use of a resilient plastic or rubber ball which is chewed so as to clean the teeth. The ball is provided with groups of bristles along its outer periphery that are equally spaced apart. The body

is provided with a plurality of spaced-apart openings that alternate with the groups of bristles and provide a means for automatically discharging dentifrice from the interior of the body.

A tongue manipulated toothbrush is described in the International PCT application No. W082/02481 filed by Frank Rees and published August 5, 1982. The device disclosed therein is in the form of a plastic disk that may be 20mm in diameter. The disk is dish-like having a downwardly turned perimeter and a raised central portion. It is provided with apertures and a peripheral bead. Bristles protrude downwardly from a lower surface of the disk. The device is manipulated against the teeth by the tongue of the user acting on the upper surface of the device.

The present invention provides a teeth cleaning device that can be made quite small and at a very reasonable cost. The preferred form of the device can be attached to a user's tongue temporarily so that it can be manipulated with the tongue about the user's mouth. The device can be used in public if desired as it is not readily visible to others.

According to the present invention, a device for cleaning teeth comprises a hollow member with an open end large enough to permit insertion of a person's tongue or finger and a closed end. A number of flexible bristles or loops are connected to the hollow member and project outwardly from the exterior surface of the member.

Preferably the hollow member is conical in shape and has a circumferential rib extending around the open end and projecting a short distance outwardly from the central axis of the conical member. This rib can be used to attach the device to one's tongue (by holding the rib with one's teeth) and to subsequently detach the device. The preferred embodiment is provided with bristles that range between 2 and 4 millimeters in length.

Further features and advantages will become apparent from the following detailed description when taken into conjunction with the accompanying drawings.

In the drawings,

Figure 1 is a side view of the device constructed in accordance with the invention;

Figure 2 is a sectional view taken along the line II-II of Figure 1;

Figure 3 is an end view of the device showing the large open end;

Figure 4 is a view of the opposite end of the device, which end has bristles protruding therefrom;

Figure 5 is a side view of another embodiment of a teeth cleaning device constructed in accordance with the invention; and,

Figure 6 is a side view of a further embodiment of a teeth cleaning device; and

Figure 7 is a side view of another embodiment of the invention.

The preferred embodiment of a teeth cleaning device 10 constructed in accordance with the invention is shown in Figures 1 to 4 of the drawings. The device comprises a generally conical hollow member 12 that is made of semi-flexible or flexible material and that is closed at one end 14. Opposite the closed end 14 is a wide, open end 15 large enough to permit insertion of a person's tongue or finger. Preferably the open end 15 is large enough to accommodate a person's tongue so that the device can be attached to the front end of the tongue 22 and used to clean one's teeth by maneuvering the device over the teeth with the tongue 22. If the device is attached to a person's finger, the finger is then used to manipulate the device over both the front and the back of the teeth for cleaning purposes.

It will be appreciated that the member 12 could have a variety of shapes other than conical and it would still function because of the flexible nature of a person's tongue. It can be multi-sided or cylindrical for example provided one end is open and the other closed.

The member 12 could also be made of rigid material rather than flexible material but it is felt that the use of rigid material might be less comfortable for some users.

Extending from the outer surface of the member 12 are a number of brush bristles 16 firmly connected to the hollow member 12. Preferably these bristles are quite short with the protruding portion extending 2 to 4 millimeters from the outer surface of the hollow member 12. As shown in Figures 1, 2 and 4, the bristles extend over the closed end 14 of the device. Preferably these bristles also extend along one side of the device at 19 for a short distance beginning at the closed end. The bristles in the region 19 can be maneuvered to brush areas of the teeth that cannot easily be reached with the bristles located at the closed end 14. The bristles are embedded in the semi-flexible material of the member 12 so that they will not become dislodged with normal handling.

The device 10 is held on a user's tongue by the vacuum created in the device after the tongue has been inserted. It will be appreciated that because the tongue is so flexible and compressible (being made up of muscle tissue), it is relatively easy for a user to shape his tongue so that it will fit into the opening 20. Then by a suitable manipulation or rearrangement of the tongue, a vacuum is

created in the device to hold it in place. If desired, small circular ribs or ridges 24 can be provided on the inside of the member 12 as shown in Figures 2 and 3. These ridges will help the tongue to grip and hold the device while in use.

Preferably a circumferential rib 18 extends around the open end 15 and projects a short distance outwardly from the centre axis 21 of the member 12. The rib 18 can be used to attach the device to a user's tongue. In order to do this, the rib is placed immediately behind the edges of the upper and lower teeth at the front of the mouth. This step helps to stabilize and hold the device at the front of the mouth so that the tongue can be inserted through the opening 20. Sucking in air at the same time will help to attach the device 10 as well. In order to remove the device 10, the aforementioned procedure is reversed, that is, the projecting rib 18 is placed against the front surfaces of the upper and lower teeth at the front of the mouth and the tongue is pulled back.

With the arrangement of the bristles shown in Figures 1 and 2, the user may wish to turn the device about the centre axis 21 in order to reach a desired surface of the teeth with the bristles. The device can be removed in the aforementioned manner without the use of fingers. After removal it can be rotated about the axis 21 so that the bristles, particularly those at 19, are redirected prior to reattachment of the device to the tongue. Because the tongue is so flexible the end 14 which its bristles can be passed over all areas of the teeth front and back, particularly the extreme rear surfaces of the back molars. It is also relatively easy to maneuver the bristles along the gum line since the tongue tip can easily reach this region.

Other embodiments of teeth cleaning devices are shown in Figures 5 and 6. Except as specifically mentioned hereinafter, these devices can be constructed in the same manner as the preferred embodiment shown in Figures 1 to 4. In the version of Figure 5, the device 30 is a generally conical, hollow member 32 the exterior surface of which is covered by short bristles 34. Only the region of the rib 18 is not covered by bristles. It will be understood that with this version since all exterior sides are the same, it is not necessary to rotate the device about its centre axis in order to brush certain surfaces of the teeth. With the version shown in Figure 6, the short fiber loops 36 rather than bristles cover only the closed end 38 of the device and about one-half of the exterior conical surface of the member 40. Along the half portion 42 the loops extend from the closed end 38 to the rib 18. With this version of the device, it may only be necessary for the user to attach the device to the tongue in two different positions in order to

clean all teeth surfaces. It will be appreciated that loops rather than bristles can be used in other versions of the device as well such as that shown in Figures 1 to 3.

The cleaning device 10 can be made from semi-flexible polyethylene or a suitable rubber or synthetic rubber. It is very compact and can be carried by the user in a container no larger than a silver dollar in circumference and approximately a half inch thick. The case for the device could for example be provided with a threaded screw type cap.

FIGURE 10

The advantages of the aforementioned teeth cleaning device should be readily apparent. A user can clean his teeth as often as he wishes as he goes about his daily activities. Moreover this can be done in public without the use of one's hands and with no more mouth movement than chewing gum. Because the device can be used while the user is carrying on other activities, the time required to clean teeth becomes of very little importance. Thus the user should be able to devote the amount of time required to clean his teeth properly. Saliva built up in the mouth during the cleaning process is simply swallowed in the same manner as any food particles in the mouth.

Because the device is not intended for use with toothpaste, the significant cost of toothpaste can be avoided by the user. Moreover the device of the invention may have a longer life than a conventional toothbrush because the bristles 16 have less of a tendency to become frayed. The reason for this is that the bristles 16 are much shorter than those on a conventional toothbrush.

Because the present device is intended to be carried at all times by the user, he can immediately clean his teeth after eating and this reduces the opportunity for harmful bacteria to develop. It is known for instance that harmful bacteria can begin to develop within 5 minutes after eating certain foods. Unpleasant breath odor is also eliminated in many cases because the teeth have been cleaned. Obviously further financial savings may result if less dental work is required due to use of the device 10.

Another embodiment of the invention is shown in Figure 7 and comprises a device 50 for cleaning teeth that can be attached to a user's tongue in the same manner as the device 10 of Figure 1. The device 50 is constructed in substantially the same manner except that it has no bristles or loops for brushing teeth. Instead the device 50 has a pointed teeth cleaning member 52 projecting outwardly from the exterior surface 54 of the hollow member. The cleaning member 52 can be an integral extension of the hollow member and is preferably made

of rubber or rubberlike material that will not harm the user's teeth or gums. The cleaning member projects outwardly from the centre of the closed end 56. Not only can the device 50 be used in place of a toothpick to remove trapped food particles from between teeth but it is also useful to massage the gums of the user.

It will be obvious to one skilled in this art that various modifications and changes can be made to the described device without departing from the spirit and scope of the invention. Accordingly, all such modifications and changes as fall within the scope of the appended claims are intended to be part of this invention.

Claims

1. A device for cleaning teeth including a member having a number of flexible bristles or loops connected thereto and projecting outwardly and characterized by said member being hollow with an open end 15 large enough to permit insertion of a person's tongue or finger and a closed end 14 and said bristles 16 or loops projecting outwardly from the exterior surface of said member.

2. A device according to claim 1 characterized in that said hollow member is made of semi-flexible or flexible material and is generally conical in shape with a large end being said open end 15 and the narrow end being said closed end 14.

3. A device according to claim 2 characterized in that said hollow member has a circumferential rib 18 extending around said open end 15 and projecting a short distance outwardly away from the centre axis of said conical member 12.

4. A device according to claim 1 characterized in that bristles 16 cover said narrow closed end 14 of the device and extend along one side 19 of the device for a short distance beginning at said closed exterior end.

5. A device according to claim 1, 2 or 3 characterized in that bristles 16 project outwardly from said exterior surface and have a length of between 2 and 4 millimetres.

6. A device according to claim 1, 2 or 3 characterized in that circumferentially extending ribs 24 are formed on the inside surface of said hollow member 12 to help attach said device firmly to a user's tongue.

7. A device according to claim 2 characterized in that several small, circumferentially extending ribs 24 are formed on the inside surface of said hollow member 12 to help attach said hollow member to a front end of a tongue and the open end 15 of the hollow member is large enough to permit insertion of a front portion of a user's tongue into the device.

8. A device for cleaning teeth including a member having a pointed teeth cleaning member projecting outwardly therefrom and characterized by said member 50 being hollow with an open end large enough to permit insertion of a person's tongue or finger and a closed end 56, and said cleaning member 52 projecting outwardly from the exterior surface 54 of said member.

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9. A device according to claim 8 characterized in that said cleaning member 52 is an integral extension of said hollow member 50 and is made of rubber or rubberlike material.

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10. A device according to claim 9 characterized in that said cleaning member 52 projects outwardly from the centre of said closed end 56.

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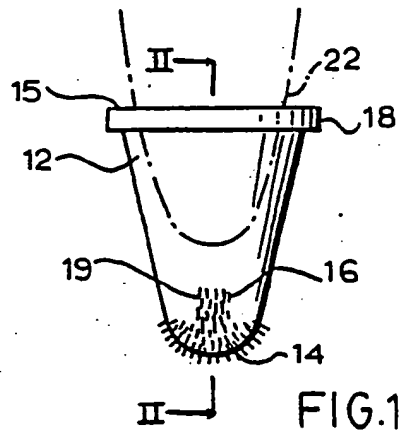


FIG. 1

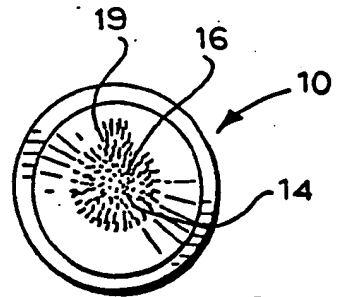


FIG. 4

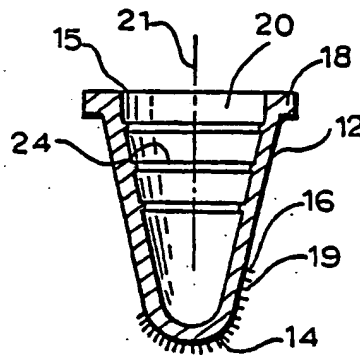


FIG. 2

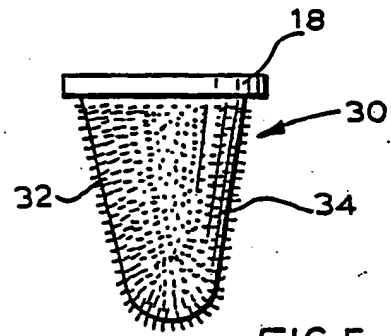


FIG. 5

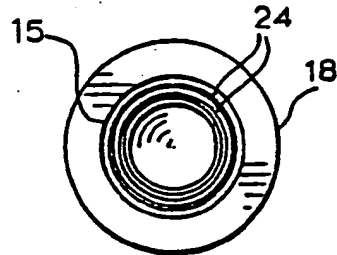


FIG. 3

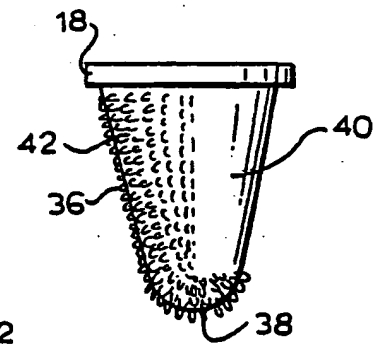


FIG. 6

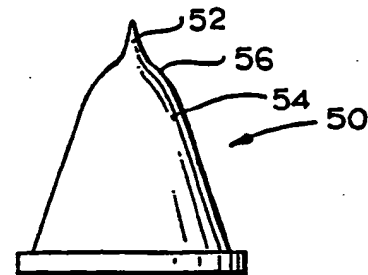


FIG. 7



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EUROPEAN SEARCH REPORT

Application number

EP 87 30 5968

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	US-A-4 292 705 (STOUFFER) * whole document *	1, 2, 4, 5, 8-10	A 46 B 5/04 A 61 C 15/00
X	US-A-1 465 522 (LUNDAY) * whole document *	1, 2, 8-10	
A		6, 7	
X	FR-A-2 571 601 (ZARZUR et al.) * page 2, lines 11-28; figures 1-3 *	1-4	
X	DE-A-3 232 313 (FINKE) * page 2, lines 1-27 *	1, 2, 5	
X	DE-A-3 429 655 (YUEH) * claim 1; figure 1 *	1	
A		4	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 06-10-1987	Examiner SIMON J J P
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